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EXAMINER	
ODOM, CURTIS B	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Response to Arguments

1. Applicant's arguments filed 7/7/08 have been fully considered but they are not persuasive. Applicant states (see page 9 of the Remarks) **"The official action appears to assert that Van Der Vleuten et al. (U. S. Patent No. 6, 535, 845) describe calculating an entropy value (see official action, page 2, second paragraph, and page 4, item 3). In particular, the official action appears to equate the claimed term "entropy" with the term "probability" as described by Van Der Vleuten et al. The applicant respectfully submits that equating these terms is an inappropriate construction of the claim language. In fact, as set forth in detail below, equating the terms "entropy" and "probability" is inconsistent with the subject matter described by Van Der Vleuten et al."**

The applicant further states (see page 10 of the Remarks) **"Extrinsic references also illustrate that entropy encoding does not constitute calculation of an entropy value, but instead is "...a coding scheme that involves assigning codes to symbols so as to match code lengths with the probabilities of the symbols. Typically, entropy encoders are used to compress data by replacing symbols represented by equal-length codes with symbols represented by codes proportional to the negative logarithm of the probability." *PlanetMath.org* (accessed April 7, 2008). The aforementioned extrinsic source, which is consistent with Van Der Vleuten et al., illustrates that an entropy encoder does not calculate an entropy value of a signal and, rather than preserving entropy, compresses data, which inherently alters signal characteristics (i.e., the signal entropy)."**

However, it is the understanding of the Examiner that equating the terms "entropy" and probability is consistent with the subject matter in Van Der Vleuten et al. and extrinsic references. Van Der Vleuten et al. discloses (see column 14, line 56-column 15, line 21) entropy encoding a signal using an arithmetic encoder to encode in the signal into a data compressed bitstream based on probabilities. The probabilities indicate the bits in a bitstream have a logical value. The probability values enable data compression of the bitstream. It is the understanding that these probability values represent an entropy of the signal. Furthermore, extrinsic reference Liu (U. S. Patent No. 7, 111, 094) discloses at column 5, lines 29-32, "**The entropy of a data set may be changed by various methods. The calculation of entropy for a data set involves calculating the individual probabilities of each token of the data set.**" Liu also discloses at column 6, lines 39-64, **"Data compression is to information theory what set theory is to higher mathematics, and as such becomes the technique by which we understand the fundamental nature of information. The lower the entropy value of a message, the smaller the message information content. Conventional information theory states that there is a limit to the degree to which data can be compressed based upon its entropy."** Therefore, it is the understanding of the Examiner that based on the teachings of Liu, the probability value of Van Der Vleuten et al. is in fact an entropy value of a data set used for encoding/compression.

The applicant also states (see page 12 of the Remarks) **"In determining the meanings of claim terms, words whose meaning is clear and unquestionable, absent any indication that their use in a particular context changes their meaning, are construed to mean exactly what they say. *Chef America, Inc. v. Lamb-Weston, Inc.*, 358 F.3d 1371, 1372, 69 USPQ2d 1857 (Fed. Cir. 2004). In the instant application, the applicant respectfully submits that the term**

"entropy" is properly construed in view of the context in which it has been used. In fact, the term "entropy" is defined in several different ways, as evidenced by extrinsic references. If extrinsic references, such as dictionaries, evidence more than one definition for the term, the intrinsic record must be consulted to identify which of the different possible definitions is most consistent with applicant's use of the terms. *MPEP* §2111.01 (II).

The instant specification (see claim 3) recites **"wherein the encoder calculates the entropy values based on a summation of probabilities".** Therefore, it is the understanding of the Examiner that equating the terms "entropy" and "probability" is consistent with the subject matter discloses in the specification.

On page 14 of the Remarks, the Applicant states **"Even if Van Der Vleuten et al. describe calculating an entropy value or encoding the signal to insert an ancillary code representing the calculated entropy value, an assertion to which the applicant does not agree, Van Der Vleuten et al. teach away from the recited claims. Unlike encoding the signal to insert an ancillary code representing the calculated entropy value to preserve an entropy, Van Der Vleuten et al. explicitly aims to decrease the entropy of the signals. *Van Der Vleuten et al.,* 5:10- 13. As discussed above, Van Der Vleuten et al. employ a prediction unit and a "probability unit to generate an output signal suitable for compression. *Van Der Vleuten et al.,* 14:56-67."**

Van Der Vleuten et al. may aim to decrease **the entropy of the signal**, however, the claims recite inserting an ancillary code representing the calculated entropy value to preserve **the**

calculated entropy value that has been inserted in the signal. Therefore, Van Der Vleuten et al. does not teach away from preserving a calculated entropy value inserted in a signal.

Therefore, is the understanding of the Examiner that Van Der Vleuten et al. in combination with Jensen et al. discloses encoding to preserve an entropy of an encoded portion of the signal. Van Der Vleuten discloses the encoder calculates (column 14, line 56-column 15, line 21) an entropy (probability signal) of at least a portion of the signal and encodes the signal (column 7, lines 27-43 and column 16, lines 3-27) to insert an ancillary code (side information) representing the calculated entropy (column 24, lines 1-5, probability signal) and wherein the output carries the encoded signal, which includes the ancillary code (column 24, lines 1-5). The entropy (probability) signal is preserved in the side information throughout the transmission of the signal from a transmission apparatus to a reception apparatus where it is regenerated (see column 16, lines 16-27). Thus, it is the understanding of the Examiner that Van Der Vleuten et al. discloses preserving the entropy value in the ancillary code (side information). Van Der Vleuten et al. does not specifically disclose encoding to preserve the ancillary code. However, Jensen et al. discloses encoding an audio signal by assigning a unique set of code frequency components to each of the data states or symbols, so that during a signal interval, a corresponding data state is represented by the presence of its respective set of code frequency components (see column 8, lines 46-51). This technique preserves the encoded signal by reducing interference with the code detection by audio signal components (see column 8, lines 52-56). Therefore, it would have been obvious to one skilled in the art at the time the invention was made to modify the encoding of Van Der Vleuten et al. to implement the coding of Jensen et al. to preserve an entropy(ancillary code) of the encoded signal by using a unique set of code

frequency components which would allow for a large number of frequency code components of the encoded signal to be detected despite program audio signal detection interference (Jensen et al., see column 8, lines 52-56). Thus, based on the above disclosure, it is the understanding of the Examiner that Van Der Vleuten et al. in combination with Jensen et al. discloses encoding to preserve an entropy of an encoded portion of the signal.

Conclusion

2. Any inquiry concerning this communication or earlier communications from the examiner should be directed to CURTIS B. ODOM whose telephone number is (571)272-3046. The examiner can normally be reached on Monday- Friday, 9-5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Shuwang Liu can be reached on 571-272-3036. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Curtis B. Odom/
Primary Examiner, Art Unit 2611
July 20, 2008